# 6

# *Sexually Transmitted Infections*

*"How long have you had this discharge?" asked the nurse. "A few weeks" was the answer. "Does your husband have a discharge?" The answer was "no," but the patient added that her husband was frequently away from home on business. Out in this rural clinic, the nurse did not have diagnostic equipment. She checked the algorithm for discharge and other complaints. The woman's symptoms and risks were suspicious of a sexually transmitted infection. She was treated with spectinomycin.*

Sexually transmitted infections (STIs) are a major public health problem in Africa and now rank among the leading causes of illness in many African countries.[21,30] Like diarrheal disease, malaria, measles, malnutrition, and tuberculosis, STIs are costly to society and result in increased health care expenditures and lowered levels of productivity.[21,37] STIs can lead to severe health consequences, especially in women and children.[34,37] In addition, STIs facilitate the transmission of human immunodeficiency virus (HIV).[36] Sequelae of STI include chronic pain, infertility, ectopic pregnancy, and genital cancers in adults and severe illness or death in newborns. Long-term consequences of STIs are evident when examining patterns of infertility in Africa. An estimated 85% of infertile African women have diagnoses attributable to a previous sexually transmitted infection, a percentage

markedly higher than in other regions of the world.[7] In parts of sub-Saharan Africa, where STI prevalence is high, as many as 30% to 50% of couples may be infertile.[37]

Because most women attending family planning centers are at risk for both pregnancy and STIs, family planning clinicians can serve an important role in preventing STIs.[10,20] Often, the family planning clinic is the only health care provider routinely seen by clients at risk for STI. Thus, family planning clinicians must be able to diagnose and treat STIs in their clients. The World Health Organization (WHO) has distilled practical considerations in case management for STI control into four brief recommendations that can guide family planning clinicians:[39]

- Educate persons at risk on the modes of disease transmission and the means of reducing the risk of transmission.
- Detect infection in asymptomatic persons and in persons who are symptomatic but unlikely to seek diagnostic and therapeutic services.
- Effectively manage persons who are infected.
- Treat and educate sex partners of persons with an STI.

In this chapter, we provide general background about STI management in the family planning setting and review current approaches to diagnosing and treating the most common STIs.

## OVERVIEW OF SEXUALLY TRANSMITTED INFECTIONS

The term "sexually transmitted infection" has gradually replaced the term "venereal disease." This shift in terminology recognizes both an expanded awareness of infectious disease transmitted through sexual contact, as well as an expanded array of diseases. Today, more than 20 separate organisms and syndromes are classified as STIs.[20] Infection is usually transmitted during unprotected sexual intercourse with an infected partner. This includes vaginal, anal, and oral intercourse.[30] STIs can also be transmitted from the mother to the fetus during pregnancy or to the newborn at delivery.[30]

STIs are caused by bacterial, parasitic, or viral pathogens. Some of the more common pathogens are *Chlamydia trachomatis*, herpes simplex virus 2 (HSV-2), human papillomavirus (HPV), *Neisseria gonorrhoea*, *Treponema pallidum*, *Trichomonas vaginalis*, hepatitis B virus (HBV), and human immunodeficiency virus (HIV). There are also a variety of syndromes associated with STIs. Some of these syndromes, such as pelvic inflammatory disease (PID), are actually complications of STIs; some are caused by genital tract infections that are not transmitted by sexual intercourse (such as bacterial vaginosis), but are associated with it. The organisms, symptoms, diagnoses, and treatment regimens for those STIs most common in Africa are listed in Table 6:1.

Bacterial and parasitic genital infections, such as *C. trachomatis*, *N. gonorrhoea*, *H. ducreyi*, and *T. pallidum* are fully curable with antibiotics. Conversely, viral infections, such as HBV, HSV-2, HPV, and HIV, cannot be cured, although their complications can usually be minimized. Thus, primary prevention is recommended for control of persistent viral STIs.[35] Laboratory testing is preferred for diagnosis, but most African health clinics do not have the resources to perform serologic tests or cultures for STI. Consequently, microbial causes of infection usually cannot be identified. As an alternative, clinicians in Africa and throughout the world are diagnosing STIs presumptively by clinical signs and symptoms of infection (such as genital ulcer, vaginal or urethral discharge, or pelvic pain) rather than microbial causes of infection. We have included a detailed discussion on "syndromic management" of STIs later in this chapter.

The acquired immunodeficiency syndrome (AIDS) warrants special mention. AIDS is caused by HIV, which gradually destroys the immune system, and the disease usually results in death. Although AIDS is now pandemic, Africa has been most severely affected. An estimated 13.3 million adults and more than a half million children in Africa are infected with HIV.[41] Most (80% to 95%) cases of HIV infection in Africa have resulted from penile-vaginal intercourse.[29] Chapter 5 contains a comprehensive discussion of HIV and AIDS.

## Table 6:1 Overview for clinical management of some common sexually transmitted infections

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Bacterial vaginosis, Anaerobic vaginosis<br><br>Clinical syndrome of anaerobic vaginal bacteria (e.g., Gardnerella vaginalis, Mycoplasma hominis, and other anaerobes) overgrowing normal lactobacilli | Excessive or foul-smelling vaginal discharge. Other signs include erythema, irritation, and intense itching of the external genitalia. Frequently assumed to be normal discharge by developing world women. | Presumptive diagnosis:<br>Typical symptoms of vulvovaginitis, elevated vaginal pH (>4.7), and presence of clue cells in saline wet mount or gram stain of vaginal discharge. Diagnosis enhanced with fishy odor of vaginal discharge after addition of 1-2 drops of 10% potassium hydroxide (KOH). Cultures are not useful. Only symptomatic women need to be treated. Male sex partners do not. | Recommended regimens:<br>Metronidazole 400-500 mg PO twice a day for 7 days OR<br>Metronidazole 2 g PO once<br><br>Metronidazole is contraindicated during the first trimester of pregnancy but may be used, if necessary, during the second and third trimesters. Data on alternative regimens are very limited. Clindamycin 300 mg PO twice a day for 7 days has been used successfully, and this regimen would be safe in pregnancy. | Understand how to take or use any prescribed medications. Avoid drinking alcohol until 24 hours after completing metronidazole medication. |
| Chancroid<br><br>(Hemophilus ducreyi) | Frequently asymptomatic in women. Symptoms appear 3-10 days after infection. Typically a single (sometimes multiple) painful, irregularly-shaped genital ulcer. Ulcer is soft, and its base may be covered with grey purulent exudate. Ulcer usually on the penis or at entrance to vagina or anus. Ulcers usually disappear without treatment in about 1 month. Painful inguinal adenopathy (tenderness of groin) in 50% of cases. | Presumptive diagnosis:<br>Clinical presentation consistent with chancroid, a unilateral bubo, or both. Diagnosis by exclusion of other STDs causing genital ulcers: negative darkfield microscopy or serologic testing (syphilis) AND inconsistent clinical presentation of ulcer(s) or negative culture (genital herpes).<br><br>Definitive diagnosis:<br>Identification of *H. ducreyi* on special culture media. | Recommended regimen:<br>Erythromycin 500 mg PO 3 times a day for 7 days.<br><br>Alternative regimens:<br>Ciprofloxacin 500 mg PO once OR<br>Ceftriaxone 250 mg IM once OR<br>Spectinomycin 2 Gms IM once OR<br>Trimethoprim (80 mg)/ sulphamethoxazole (400 mg) 2 tablets twice a day for 7 days.<br><br>The latter regimen has been shown to be less effective in some parts of Africa and should only be used in areas where in vitro resistance rates are low and monitored regularly. Due to widespread resistance, tetracycline and penicillins should not be used. | Obtain HIV testing because genital ulcers are associated with HIV. Refer sex partners for treatment. Carefully clean ulcerative lesion(s) 3 times a day. Use condoms to prevent future infections. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Chlamydia<br><br>(Chlamydia trachomatis) | Sexually transmitted infections caused by *C. trachomatis*. Symptoms usually appear 7-21 days after infection and include purulent cervical discharge or watery, white or yellow urethral discharge. Other symptoms include spotting after sexual intercourse, pain on urination, and lower abdominal pain. Can lead to PID, ectopic pregnancy, and infertility in women and chlamydial ophthalmia and pneumonia in newborns. Often, men, and especially women, have asymptomatic infections. | Presumptive diagnosis:<br>Diagnosis usually by exclusion, in the absence of culturing techniques. In symptomatic women, presence of yellow mucopurulent endocervical exudate. In asymptomatic women, presence of ≥10 PMN leukocytes per x 1,000 field on Gram-stain of endocervical mucus. In symptomatic men (with negative gonorrhea tests), white blood cells on Gram stain of urethral discharge OR sexual exposure to an NGU-causing agent. In asymptomatic men (with negative gonorrhea tests), ≥4 PMN leukocytes per x 1,000 field on intraurethral smear.<br><br>Definitive diagnosis:<br>Diagnosis by observed growth on cycloheximide-treated McCoy cells. Fluorescent monoclonal antibody stains or enzyme immunoassay tests may be available. Future use of DNA amplification techniques may increase sensitivity. | Recommended regimens:<br>Doxycycline 100 mg PO twice a day for 7 days OR Tetracycline 500 mg PO 4 times a day for 7 days.<br><br>Tetracyclines are contraindicated during pregnancy.<br><br>Alternative regimens (for patients in whom tetracyclines are contraindicated or not tolerated):<br>Erythromycin 500 mg PO 4 times a day for 7 days OR, if erythromycin is not tolerated, Sulfisoxazole 500 mg PO 4 times daily for 10 days. Equivalent doses of other sulphonamides may be used. Azythromycin 1 g PO once is effective treatment for chlamydia urethritis, but because its efficacy has not been proven in non-gonococcal urethritis, it should only be used where a chlamydial aetiology has been proven. This regimen is also expensive. (Gonorrhea resistance has been documented. This resistance, plus expense and side effects from a 2 g PO dose, make this regimen inadvisable for dual treatment.) | Sex partners must be treated. Use condoms to prevent future infections. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
|---|---|---|---|---|
| Genital warts (Condyloma acuminata)<br><br>Human papillomavirus (HPV) | Appear as single or multiple, soft, dry, painless, skin-colored growths around the vulvovaginal area, penis, anus, urethra, or perineum. In women, growths may occur on vaginal or cervical walls and not be noticed. Symptoms appear from one to several months after infection. HPV cannot be cured, even if warts disappear. Can cause cervical and other genital cancers in adults. | Presumptive diagnosis:<br>By typical clinical presentation on the external genitalia or of koilocytosis on Pap smear specimens. Colposcopy may aid in diagnosis of certain cervical lesions. Exclude possibility of condyloma lata (flat, moist lesions) with darkfield microscopy or serologic tests for syphilis.<br><br>Definitive diagnosis:<br>By biopsy, but usually unnecessary. Very atypical lesions, where neoplasia is a consideration, should be biopsied before therapy. Some warts in the anogenital area are associated with genital dysplasia or carcinoma. A pap smear of cervical lesions shows typical cytologic changes. | Regimens for external genital, perianal, vaginal warts:<br>(Physical) Cryotherapy with liquid nitrogen, solid carbon dioxide, or cryoprobe OR electrosurgery OR surgical removal.<br><br>(Chemical) Podophyllin, 10-25% in compound tincture of benzoin should be applied to warts, avoiding normal tissue. Wash off warts thoroughly 1-4 hours after podophyllin application. Podophyllin should not be used for anal, urethral, oral, or cervical warts, and is contraindicated during pregnancy and lactation.<br>OR Trichloroacetic acid (80-90%) applied to warts weekly.<br><br>Note: Treatment of cervical warts should not start until a satisfactory cervical smear is obtained. Management should be carried out in consultation with an expert. | Sex partners do not need to be examined, as most are already infected. However, anogenital warts are contagious to uninfected sex partners. Use condoms to prevent infection to uninfected sex partners. Because HPV is incurable, warts can reappear after removal. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Gonorrhea<br><br>(Neisseria gonorrhoea) | Symptoms usually appear 1-14 days after infection. Symptoms in men include pain on urination, increased frequency of urination, and yellow or white purulent urethral discharge. Up to 25% of infected men may be asymptomatic. Often asymptomatic in women. When present, symptoms include abnormal vaginal discharge, pain on urination, spotting after sexual intercourse, lower abdominal pain, and abnormal or painful menses. Infection can cause PID and sterility in women; urethritis, epididymitis, and sterility in men, and; ophthalmia neonatorum in newborns. | Presumptive diagnosis:<br>Microscopic identification of typical Gram-negative intracellular diplococci on smear of urethral exudate (men) or endocervical material (women) OR growth on selective medium demonstrating typical colonial morphology, positive oxidase reaction, and typical Gram-stain morphology.<br><br>Definitive diagnosis:<br>Growth on selective medium demonstrating typical colonial morphology, positive oxidase reaction, and typical Gram-stain morphology, and confirmed by sugar utilization, coagglutination, or antigonococcal fluorescent antibody testing. | Recommended regimens:<br>Ceftriaxone 125 or 250 mg IM once OR Cefixime 400 mg PO once OR Spectinomycin 2 g IM once OR Ofloxacin 400 mg PO once OR Ciprofloxacin 500 mg PO once (contraindicated in pregnancy); however, gonorrhea resistance to ciprofloxacin has been documented.<br><br>Alternative regimens:<br>Kanamycin 2 g IM once OR Trimethoprim (80 mg)/ sulphamethoxazole (400 mg), 10 tablets PO once daily for 3 days.<br><br>Kanamycin and Trimethoprim/ sulphamethoxazole should only be used in regions where *N. gonorrhoea* are susceptible and susceptibility and is monitored at regular intervals. Second-line treatment with recommended drugs should be available.<br><br>PLUS concurrent antichlamydial therapy such as:<br>Doxycycline 100 mg PO twice a day for 7 days. | Refer sex partners for examination and treatment. Avoid having sex until you and your partner(s) are completely cured. Understand how to take any prescribed oral medications. Use condoms to prevent future infections. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Granuloma inguinale (donovanosis)<br><br>(Calymmato-bacterium granulomatis) | Symptoms appear 8-80 days after infection. Single or multiple nodules appear below the skin at the site of inoculation. Nodules break through to form granulomatous ulcers that are painless, bleed on contact, and enlarge slowly. In men, ulcers appear on glans and prepuce of penis. Women are frequently asymptomatic. | Presumptive diagnosis:<br>Typical clinical presentation is sufficient. Resolution of lesions after antibiotic therapy supports diagnosis.<br><br>Definitive diagnosis:<br>Microscopic exam of scrapings of biopsy specimens from the ulcer margin reveals typical Donovan bodies. Tissue culture not feasible. | Recommended regimen:<br>Trimethoprim (80 mg)/ sulphamethoxazole (400 mg), 2 tablets twice a day for a minimum of 14 days and until lesions have completely re-epithelialized.<br><br>Alternative regimens:<br>Doxycycline 100 mg PO twice a day for 7 days OR<br>Tetracycline 500 mg PO 4 times a day. | Understand how to take any prescribed oral medication. Refer sex partner(s) for examination. |
| Hepatitis B<br><br>Hepatitis B virus (HBV) | Most HBV infections are clinically inapparent. When present, symptoms usually develop 1-9 months after contact and include serum sickness-like prodrome (skin eruptions, urticaria, arthralgias, arthritis), anorexia, vomiting, headache, fever, dark urine, jaundice, and moderate liver enlargement. Long-term complications include chronic hepatitis, cirrhosis, hepatocellular carcinoma, hepatic failure, and death. | Presumptive diagnosis:<br>By typical clinical symptoms and exposure to a patient with presumed or definitive HBV infection.<br><br>Definitive diagnosis:<br>Serodiagnosis of HBV infection. | No known cure. HBV is the only STD that has a vaccine. Vaccination of all newborn infants and adolescents is recommended. Persons with a recent STD and those with more than one sex partner in the previous 6 months also should receive HBV vaccine. | Persons at risk for sexual transmission of HBV are also at risk for HIV and other STDs. Condoms should be used to prevent future infections. Sex partners should be examined immediately. Vaccination can prevent infection among persons exposed sexually to HBV if administered within 14 days of exposure. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Herpes genitalis<br><br>[Herpes simplex virus (types 1 & 2)] | HSV-2 is more common in genital disease. Single or multiple small vesicles, usually pruritic, on the genitalia. Vesicles spontaneously rupture to form shallow ulcers that may be very painful. Other symptoms include pain on intercourse, pain on urination, discharge, fever, and malaise. Initial symptoms appear 1-26 days after infection. First clinical occurrence is called first episode infection. Subsequent occurrences are usually milder and called recurrent episodes. HSV can be transmitted to newborns during vaginal delivery and cause neonatal herpes. Risk of transmission is highest with primary infection. | Presumptive diagnosis:<br>Usually by clinical judgment. Likely when typical genital lesions are present or a pattern of recurrence has developed. Further supported by direct identification of multinucleated giant cells with intranuclear inclusions in a clinical specimen prepared by Papanicolaou or other serological techniques.<br><br>Definitive diagnosis:<br>HSV virus tissue culture demonstrates the characteristic cytopathogenic effect following inoculation of a specimen from the cervix, urethra, or base of a genital lesion. | No known cure. Symptoms can be modified with acyclovir treatment as soon as possible following onset of symptoms. Topical therapy with acyclovir produces only minimal shortening of the duration of symptomatic episodes and is not recommended.<br><br>Recommended regimens:<br>First clinical episode:<br>Acyclovir 200 mg PO 5 times a day for 5 days.<br>(Treatment can be expected to reduce formation of new lesions, duration of pain, time to healing, and viral shedding; however, treatment will not influence the natural history of recurrent disease.)<br>Recurrences:<br>Acyclovir 200 mg PO 5 times a day for 5 days.<br>Suppression of recurrent outbreaks (>6 per year):<br>Acyclovir 200 mg 3 times a day PO continuously. | Keep involved area clean and dry. Refrain from sexual contact during symptomatic periods. Understand that HSV can also be transmitted during asymptomatic periods. Use condoms to minimize exposure to infection. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Lymphogranuloma venereum (LGV)<br><br>[Chlamydia trachomatis (types L1,L2,&L3)] | Genital lesion is a small, painless vesicle or non-indurated ulcer (often unnoticed). Inguinal adenopathy (buboes) follows 1-4 weeks after. Women may be asymptomatic, although some experience lower back pain and inguinal buboes. Symptoms appear after 3-12 days for genital lesion and after 10-30 days for inguinal bubo. LGV can cause cervicitis, urethritis, and enlargement of genitalia. | Presumptive diagnosis:<br>Often diagnosed clinically and should be differentiated from chancroid. A titer of 1:64 on the LGV complement fixation test is considered diagnostic.<br><br>Definitive diagnosis:<br>Isolation of *C. trachomatis* from appropriate specimen and confirmation of LGV immunotype, although such laboratory capabilities are not widely available. | Recommended regimens:<br>Doxycycline 100 mg PO twice a day for 14 days OR<br>Tetracycline 500 mg PO 4 times a day for 14 days.<br><br>Alternative regimens:<br>Erythromycin 500 mg PO 4 times a day for 14 days OR<br>Sulphadiazine 1 g PO 4 times a day for 14 days.<br>Other sulphonamides can be used in equivalent doses.<br><br>Fluctuant lymph nodes should be aspirated as needed. Incision and drainage or excision of nodes will delay healing and are contraindicated. | Understand how to take any prescribed oral medications.<br>Refer sex partner(s) for examination as soon as possible. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Pelvic Inflammatory Disease (PID)<br><br>Polymicrobial etiology: combinations of N. gonorrhoea, C. trachomatis, anaerobic bacteria, facultative gram-negative rods, M. hominis, and other microbial agents. | Spectrum of inflammatory disorders of upper genital tract of women. Many women have atypical or no symptoms. Symptoms include pain and tenderness of the lower abdomen, cervix, uterus, and adnexae. Other possible symptoms are elevated white blood cell count (WBC), dyspareunia, vaginal discharge, menometrorrhagia, dysuria, pain with menses, fever, chills and sometimes nausea and vomiting. Risk of PID increased by multiple sex partners, history of PID, or recent insertion of intrauterine device (IUD). PID can cause infertility, chronic pain, pelvic abscess, and ectopic pregnancy. | Presumptive diagnosis:<br>By typical clinical symptoms if other serious conditions, such as acute appendicitis or ectopic pregnancy, can be excluded. Diagnosis often based on imprecise clinical findings.<br><br>Definitive diagnosis:<br>Through direct visualization of inflamed (edema, hyperemia, or tubal exudate) fallopian tube(s) during laparoscopy or laparotomy. Cultures of tubal exudate may be helpful. | Because the causative organisms are usually unknown at the start therapy, use regimens effective against a broad range of pathogens.<br><br>*Inpatient therapy:*<br>Recommended regimens:<br>1. Ceftriaxone 500 mg IM once daily PLUS Doxycycline 100 mg PO or IV twice a day OR Tetracycline 500 mg PO 4 times a day PLUS Metronidazole 400-500 mg PO OR IV twice a day or Chloramphenicol 500 mg PO or IV 4 times a day.<br>2. Clindamycin 900 mg IV 8 hourly PLUS Gentamicin 1.5 mg/kg IV 8 hourly.<br>3. Ciprofloxacin 500 mg PO twice a day OR Spectinomycin 1 gm IM 4 times a day PLUS Doxycycline 100 mg PO or IV 2 times a day OR Tetracycline 500 mg 4 times a day PLUS Metronidazole 400-500 mg PO or IV twice a day OR chloramphenicol 500 mg PO or IV 4 times a day. | Refer sex partner(s) for evaluation and treatment. Many sex partners are infected but asymptomatic. Avoid sexual activity until you and your partner(s) are cured. Understand how to take any prescribed oral medications. Use condoms to prevent future infections. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Pelvic Inflammatory Disease (PID) *(Continued)* | | | Duration of therapy should be at least 2 days after the patient has improved. This treatment should be followed by either doxycycline 100 mg PO twice a day OR tetracycline 500 mg PO 4 times a day, both for 14 days.<br><br>*Ambulatory therapy:*<br>Recommended regimens:<br>Single dose therapy for uncomplicated gonorrhea (e.g., ceftriaxone) PLUS Doxycycline 100 mg PO twice a day for 14 days OR Ofloxacin, 400 mg, PO, twice a day for 14 days PLUS Metronidazole, 500 mg PO, twice a day for 14 days.<br><br>*Alternative regimens* (in absence of single dose gonorrhea therapy)<br>Trimethoprim (80 mg)/ sulphamethoxazole (400 mg) 10 tablets PO once a day for 3 days and then 2 tablets twice a day for 10 days PLUS Doxycycline 100 mg PO twice daily or Tetracycline 500 mg PO 4 times a day for 14 days PLUS Metronidazole 400-500 mg PO, twice a day for 14 days. | |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Syphilis<br><br>(Treponema pallidum) | Primary stage:<br>Classical symptom is a chancre (indurated painless ulcer) at the site of exposure (e.g., vulva, cervix, penis, mouth, or anus). Internal lesions in women may not be detected. Lesion heals within a few weeks, without treatment. Symptoms appear 10-90 days after infection. Differential diagnosis for all genital lesions should include syphilis.<br><br>Secondary stage:<br>If primary stage untreated, symptoms will appear in a few weeks, including a highly variable skin rash (especially on palms of hands and soles of feet), general lymph node enlargement, condyloma lata, hair loss, and fever and malaise. Symptoms last several weeks to months and will disappear even without treatment.<br><br>Latent:<br>No clinical signs of infection. Early syphilis (infectious) defined as primary, secondary, or latent syphilis of less than 2 years duration. Late syphilis defined as latent syphilis of more than 2 years duration or syphilis of unknown duration. Syphilis infection can cause congenital syphilis and late syphilis (including neurosyphilis, cardiovascular syphilis, and localized gumma formation.) | Presumptive diagnosis:<br>Primary stage:<br>By identification of typical lesion(s) and either (1) a positive darkfield exam; (2) fluorescent antibody techniques in material from a chancre, regional lymph node, or other lesion; (3) the presence of a serologic test for syphilis (STS) titer at least 4-fold greater than the last; or patient's exposure to syphilis within 90 days of lesion onset.<br><br>Secondary stage:<br>Diagnosis through typical clinical presentation of symptoms and a strongly reactive STS. Condyloma lata will be darkfield positive.<br><br>Latent stage:<br>Periods of infection with strongly reactive STS, but no clinical signs of infection.<br><br>Definitive diagnosis:<br>Through identification of *T. pallidum* with darkfield microscopy or fluorescent antibody technique, for primary and secondary syphilis. No definitive diagnosis for latent syphilis. | Early syphilis (primary, secondary, or latent syphilis of not more than 2 years duration):<br>Recommended regimen:<br>Benzathine penicillin G 2.4 million units IM once (often given as two injections at separate sites).<br><br>Alternative regimen:<br>Aqueous procaine penicillin G 1.2 million units IM daily for 10 consecutive days.<br><br>Late latent and late benign syphilis (latent syphilis of indeterminate length or of more than 2 years duration)<br>Recommended regimen:<br>Benzathine penicillin G 7.2 million units total, administered as 2.4 million units IM given 1 week apart for 3 consecutive weeks.<br><br>Alternative regimen:<br>Aqueous procaine penicillin G 1.2 million units IM daily for 20 consecutive days.<br><br>Neurosyphilis<br>Recommended regimen:<br>Aqueous crystalline penicillin G 12-24 million units total, administered as 2-4 million units every 4 hours IV, for 14 days. | Obtain testing for HIV infection because genital ulcers may facilitate HIV infection. Return for follow-up serologies. Understand how to take any prescribed oral medications. Avoid sexual activity until you and your partner(s) are cured. Use condoms to prevent future infections. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Syphilis *(Continued)* | | | Alternative regimen: Aqueous procaine penicillin G 1.2 million units IM daily, AND probenecid 500 mg PO 4 times a day, both for 10-14 days.<br><br>Penicillin-allergic patients: Doxycycline 100 mg PO 2 times a day for 14 days (if early syphilis) or for 28 days (if late syphilis).<br><br>Penicillin-allergic pregnant women: Erythromycin 500 mg PO 4 times a day for 14 days. | |
| Trichomoniasis<br><br>(Trichomonas vaginalis) | Excessive, frothy, green or yellow vaginal discharge, with foul odor. Itching, erythema, edema, pain on urination, and pain on intercourse also may occur. Some women may have no symptoms. Men are usually without symptoms, but may have urethritis, balanitis, cutaneous lesions on penis, pain on urination, and itching. Recurrent infections are common. | Diagnosis when a vaginal culture or fluorescent antibody is positive for *T. vaginalis* OR typical motile trichomonads are identified in a saline wet mount of vaginal discharge. Trichomonads found by Pap smear are not diagnostic of active infection. | Recommended regimen: Metronidazole 2 g PO once.<br><br>Alternative regimen: Metronidazole 400-500 mg PO twice a day for 7 days.<br><br>Metronidazole is contraindicated in the first trimester of pregnancy but may be used during the second and third trimesters. There is no evidence that other 5-nitroimidazoles are superior to metronidazole, but they may be used when dictated by availability. Asymptomatic women should be treated with the same regimen as symptomatic women. | Understand how to take or use any prescribed medications. Use condoms to prevent future infections. Avoid drinking alcohol until 24 hours after completing metronidazole therapy. Both asymptomatic and symptomatic male partners should be treated. |

Table 6:1 Overview for clinical management of some common sexually transmitted infections (Continued)

| Disease (pathogen) | Symptoms | Diagnosis | Treatment | Patient instructions |
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| Vulvovaginal candidiasis<br><br>(Candida albicans) | Candida are normal flora of skin and vagina and not considered sexually transmitted infections. Clinical presentation varies from no signs or symptoms to itching, irritation, or pain of the external genitalia. Type of symptoms does not distinguish microbial etiology. Men may develop urethritis, balanitis, or cutaneous penile lesions. Recurrent infections are common. Persistent candidiasis may indicate HIV. | Presumptive diagnosis:<br>By typical clinical symptoms of vulvovaginitis and microscopic identification of yeast forms or hyphae in Gram stain or KOH wet-mount preparations of vaginal discharge.<br><br>Definitive diagnosis:<br>By positive culture for *C. albicans* (or other *Candida* species) in symptomatic women. Cultures may detect clinically insignificant infections (should not be treated) and are not recommended. | Recommended regimens:<br>Miconazole or clotrimazole, 200 mg intravaginally daily for 3 days OR Clotrimazole 500 mg intravaginally once, OR Nystatin 100,000 units intravaginally daily for 14 days. | Understand how to take or use any prescribed medications. Wear a sanitary pad to protect clothing, and change pads frequently. Continue taking medicine even during menses. |

## TRENDS OF SEXUALLY TRANSMITTED INFECTIONS

At least 333 million new cases of curable STIs occurred worldwide in 1995. There were 170 million new cases of trichomoniasis, 89 million of chlamydia, 62 million of gonorrhea, and 12 million of syphilis.[38]

Because routine surveillance for STIs is rarely conducted in Africa, little is known about the epidemiology of STIs on the continent. Most data on STIs originate from small studies of selected populations, typically asymptomatic pregnant women.[11,30] These studies indicate that STI rates are high in most parts of Africa. For example:

- In a review of several studies of family planning and prenatal clinic attendees, each of three STIs—gonorrhea, chlamydia, and syphilis—infected, on average, 10% of persons tested.[37]
- In a hospital-based study in Nairobi, Kenya, nearly one in four adolescent women attending a prenatal clinic was diagnosed with gonorrhea, chlamydia, or herpes.[22]
- In a study of prenatal clinic attendees in Cameroon, 15% of women were diagnosed with gonorrhea, and 21% were diagnosed with trichomoniasis.[27]
- In a Mozambique study, as many as 10% to 15% of primary health care clinic visits were for treatment of STIs.[1]

Overall STI rates are believed to be highest in sub-Saharan Africa and lowest in North Africa. STIs are also common in areas of Central and East Africa. Rates of STI are moderate in most areas of West Africa but high in Cote d'Ivoire. Patterns of transmission may vary widely across the continent.[31]

Gonorrhea is probably the most common bacterial STI in Africa.[21,31] Rates of chlamydia infection are likely to be comparable to rates of gonorrhea, but little is known about the prevalence and incidence of chlamydia.[4] Chancroid is increasingly common among commercial sex workers in Africa and is important because of its apparent ability to facilitate HIV infection.[11] Although less common than chancroid in most areas, syphilis may cause severe reproductive health problems.[4] Ulcerative STIs caused by genital herpes, chancroid,

donovanosis, and lymphogranuloma venereum infections may together account for nearly 50% of all diagnosed STIs in Africa.[31]

The same sexual behaviors may result in different STIs in various areas of Africa, depending on which infection is most prevalent.[23] For example, the prevalence of genital ulcer disease is high in many parts of East, Central, and Southern Africa.[28] In East Africa, 50% to 70% of genital ulcers are due to chancroid.[32] Similarly, in sub-Saharan Africa, the majority of genital ulcer disease is caused by chancroid.[11,21] However, in West Africa, genital ulcers are much less common and are usually caused by genital herpes or syphilis, not chancroid.[21] When symptoms and signs may be due to any of several STIs, a presumptive diagnosis can often be based on the local epidemiologic profile of STIs. For example, if a patient's symptoms and signs are indistinguishable between syphilis and chancroid, and treatment for both infections is not feasible, the clinician may treat for the more prevalent STI and provide adequate follow-up to verify cure.[20]

## COMPLICATIONS OF SEXUALLY TRANSMITTED INFECTIONS

Complications from STIs are more severe and more common among women than men:

Pelvic inflammatory disease is a potentially life-threatening condition that results from complications of *N. gonorrhoea* and *C. trachomatis* infections. PID increases the risk of tubal infertility, ectopic pregnancy, and chronic abdominal pain.[11] In many African hospitals, PID is the most frequent reason for admission to gynecological wards, accounting for up to 40% of admissions.[25]

Tubal infertility is associated with PID and results from inflammation and scarring of the fallopian tubes following ascent of infection into the upper reproductive tract.[36] Tubal occlusion prevents the egg from passing through the fallopian tubes. Nearly 75% of infertility in Africa is related to gonorrhea or chlamydia infections that have extended into the upper reproductive tract.[4,7]

Ectopic (tubal) pregnancy is a potentially fatal condition that results when a fertilized egg implants outside the uterus, usually in the fallopian tubes. Ectopic pregnancy occurs when an ascending infection in the reproductive tract partially blocks tubal passages. In one Kenyan hospital, ectopic pregnancy was the most common reason for emergency surgical admission.[37]

Genital cancers are potentially fatal diseases that have been associated with STIs. HPV, which causes genital warts, is associated with the development of cervical neoplasia.[33,37]

Chronic pain may be experienced by patients with STIs such as genital herpes and PID, which may cause persistent or episodic genital or abdominal pain.

## FACTORS AFFECTING RISK

Family planning professionals should be aware of factors that affect the risk of transmitting or acquiring STIs.

- **The risk for STIs differs from the risk for unintended pregnancy during sexual intercourse.** The risk of pregnancy per act of intercourse ranges from 0% to 20%, varying with menstrual cycle stage. The risk of STI transmission exists during *any* act of unprotected intercourse with an infected partner. The exact risk per coital episode depends on the transmissibility of the particular STI and the sex of the infected person. For example, the risk of acquiring gonorrhea from a single act of intercourse with an infected partner is approximately 25% for men and 50% for women.[6]
- **STIs cause more severe, long-term complications in women than in men**. The increased severity of complications from STIs among women results from several factors. First, asymptomatic infection is much more common in women than in men, resulting in delayed diagnosis and treatment at more advanced stages of disease. Additionally, the diagnosis of STIs is more difficult because of physiological differences. When present, infection is

more likely to ascend into the reproductive tract of women than of men. Finally, the fluid dynamics of intercourse make STIs more easily transmitted to women from a single sexual encounter.

- **STIs facilitate the transmission of HIV.** An interactive relationship exists between STIs and the sexual transmission or acquisition of HIV.[36] Ulcerative STIs (such as chancroid, syphilis, and genital herpes) may facilitate HIV transmission by acting as a port of entry for infection.[4,31,33] The high prevalence of ulcerative STIs may partially explain corresponding high rates of HIV transmission, especially in sub-Saharan Africa.[24] One Kenyan study estimated that 75% to 98% of HIV infections were attributable to genital ulcer disease.[14] Non-ulcerative STIs (such as chlamydia, gonorrhea, and trichomoniasis) also may facilitate HIV transmission by increasing the number of target cells that can be infected.

  In addition, the presence of HIV affects the natural history of many STIs and their response to antimicrobial therapy.[31,37] The immune dysfunction caused by HIV may make ulcerative symptoms more persistent and more invasive by affecting the clinical course of infection. In Kenya, the failure rate of single-dose therapy for chancroid increased following a rapid rise in concurrent HIV infection.[34] HIV immunosuppression may also increase the severity of other viral infections such as HSV-2, HBV, and HPV.[4,31]

  Concurrent HIV infection should be considered among clients with STIs. Similarly, clients with HIV infection should be evaluated for other STIs. In Tanzania, community-based programs emphasizing syndromic treatment of STIs resulted in a significant decrease in HIV incidence.[12]

- **The type of sexual activity affects the risk of acquiring STIs**. Some types of sexual activity may increase exposure to infectious STI pathogens through irritation, inflammation, or tearing of delicate mucosal surfaces. In some African cultures, women insert drying agents and astringents such as leaves, herbs, and powders into the vagina prior to intercourse. However, intravagi-

nal drying substances may lead to inflammatory reactions or abrasions of the vaginal surfaces and may facilitate STI and HIV transmission.[2] Other types of "dry sex," such as intercourse with minimal or no foreplay, may pose similar risk. Additionally, anal intercourse increases the risk of mucosal tearing. Couples should use condoms during this activity.

- Certain population groups may be at increased risk for STI. In general, rates of STI tend to be higher in men, residents of urban areas, unmarried persons, and young adults.[4] Certain subsets of the population, such as commercial sex workers, their male clients, long-distance truck drivers, and members of the military (and their sexual partners) often have the highest rates of STI because they have a number of different sex partners.[37] These population groups are defined as "core transmitters" of infection because their behaviors sustain continuing high levels of STI within a community.[3] The purpose of identifying core groups with high rates of STI is to find ways to reach those with both the greatest need for preventive services and the greatest tendency to transmit STI to others.

## SEXUALLY TRANSMITTED INFECTIONS IN PREGNANCY

Transmission of STIs to the fetus may occur during pregnancy through placental transfer or during birth through contact with STI microorganisms. Many STI pathogens can be vertically transmitted to the fetus, including *T. pallidum*, *C. trachomatis*, *N. gonorrhoea*, HBV, HSV-2, HPV, and HIV. (See Table 6:2.) Some of these microorganisms can be fatal or severely debilitating to the fetus and result in spontaneous abortion, stillbirth, prematurity, low birthweight, and neonatal death, or cause severe illness such as pneumonia, meningitis, blindness, or respiratory tract disease.[5] (See Table 6:2.) One study found that congenital syphilis was the fourth leading cause of perinatal mortality in Ethiopia;[26] another estimated that congenital syphilis was responsible for 30% of perinatal deaths fruitin Zambia.[15] In Kenya, the risks of gonococcal ophthalmia and chlamydial ophthalmia for infants born to infected mothers were estimated to be 42% and 37%, respectively.[34]

Worldwide, mother-to-infant transmission accounts for a high percentage of HIV infections among children.[9] Approximately 23% to 42% of infants born to HIV-infected mothers will develop HIV infection themselves.[19] In Africa, vertical transmission of infection to newborns is important because so many women of reproductive age are HIV-infected.[31]

Table 6:2 Role of sexually transmitted organisms in pregnancy and childbirth

| Organism | Maternal Infection Rate (%)[1] | Infant Effects | Risk from Infected Mother | Prevention | Treatment of Neonate |
|---|---|---|---|---|---|
| *Neisseria gonorrhoeae* | 1-30 | Conjunctivitis, sepsis, meningitis | About 30% | Screening; culture mother; apply ocular prophylaxis | Ceftriaxone |
| *Chlamydia trachomatis* | 2-25 | Conjunctivitis, pneumonia, bronchiolitis, otitis media | 25-50% conjunctivitis 5-15% pneumonia | Screening in third trimester; culture mother; apply ocular prophylaxis | Erythromycin |
| *Treponema pallidum* | 0.01-15 | Congenital syphilis, neonatal death | 50% | Serologic screening in early and late pregnancy | Penicillin |
| Hepatitis B virus | 1-10 | Hepatitis, cirrhosis | 10-90% | Active HBV immunization | Post-exposure passive HBV immunization |
| Herpes simplex virus | 1-30 | Disseminated, central nervous system, localized lesions | 3% recurrent at delivery, 30% primary at delivery | Cesarean delivery if lesions present at delivery | Vidarabine, Acyclovir |
| Human papilloma virus | 10-35 | Laryngeal papillomatosis | Rare | None | Surgical |
| Human immuno-deficiency virus | 0.01-20 | Pediatric AIDS | 22-39% | Pregnancy prevention | Zidovudine |

[1]Percent of pregnant women with evidence of infection.

Source: Cates (1995)

Because an STI may greatly harm a fetus, clinicians should routinely consider whether pregnant women may be infected with STIs that may be harmful to the fetus, including syphilis, gonorrhea, chlamydia, and HIV. Where available, prenatal screening for syphilis has been shown to be cost effective for preventing reproductive morbidity.[16] Pregnant women with curable STIs should be treated. Drugs that may harm the fetus, such as the tetracyclines, should be restricted; however, metronidazole can be safely prescribed after the first 3 months of pregnancy. Additionally, the use of 1% silver nitrate solution or 1% tetracycline ointment dramatically reduces the transmission of gonococcal and chlamydial ophthalmia to the neonate.[34]

## DIAGNOSIS AND TREATMENT

Diagnosing and treating STIs are often perceived to be too costly and too advanced for many developing countries. Actually, the direct costs associated with diagnosing and treating uncomplicated reproductive tract infections are substantially lower than the costs of managing complications from the infection.[37] STI control has been shown to be highly cost effective in many developing countries in terms of dollars spent per number of healthy years of life saved.[13]

In Africa, it is usually not possible to diagnose the infecting organism because most clinics lack the capacity, resources, training, or laboratory support to comprehensively examine clients for STIs. Cultures or other diagnostic tests are rarely available. Even when tests are conducted, results may not be available for 1 to 7 days, requiring clients to return to the clinic to obtain test results and treatment.[39] Even if they are infected, some clients may be unable or unwilling to return to the clinic because of financial and transportation barriers.

In the absence of laboratory tests, clinicians have begun managing STIs by using a syndromic approach—identifying groups of symptoms and signs of infection without laboratory tests and treating for all possible infections with drugs of proven local efficacy. Syndromic diagnosis can be implemented with minimal economic input and is currently practiced in primary health centers in several countries,

including Botswana, Nigeria, Tanzania, and Zimbabwe.[20] In many parts of East, Central, and Southern Africa, clinicians diagnose genital ulcer disease without laboratory facilities and rapid diagnostic tests.[28]

WHO has developed simplified guidelines for STI syndromic management. (See Figures 6:1, 6:2, 6:3, and 6:4.) These flow charts outline actions for managing symptoms and signs of genital ulcer, urethral discharge, vaginal discharge, and lower abdominal pain in the client. Because clients may present with two or more concurrent STDs (e.g., coexisting gonorrhea and chlamydia), clinicians should treat clients for *all* the listed STIs that may possibly cause the indicated symptoms and signs. When possible, clinicians also should conduct a genital examination to confirm signs before diagnosing STIs with the algorithms.[20] The algorithms are intended for use when no laboratory is available:

> ***Example 1:*** *A client reports the recent onset of a genital ulcer or lesion with pain. The exam reveals a single, non-recurrent, open sore in the patient's genital area. Without further information, treat the patient for both syphilis and chancroid infections and follow up appropriately.*[39]

> ***Example 2:*** *A client complains of vaginal discharge. The patient is determined to be at risk for STI under the WHO-recommended risk assessment. In the absence of diagnostic tests, treat the patient for both cervicitis and vaginitis. (*At risk: the patient has a symptomatic partner or meets any two of the following criteria: age under 21; single; more than 1 sex partner; new sex partner in past 3 months.)*[39]

Figure 6:1a Flow Chart for Urethral Discharge

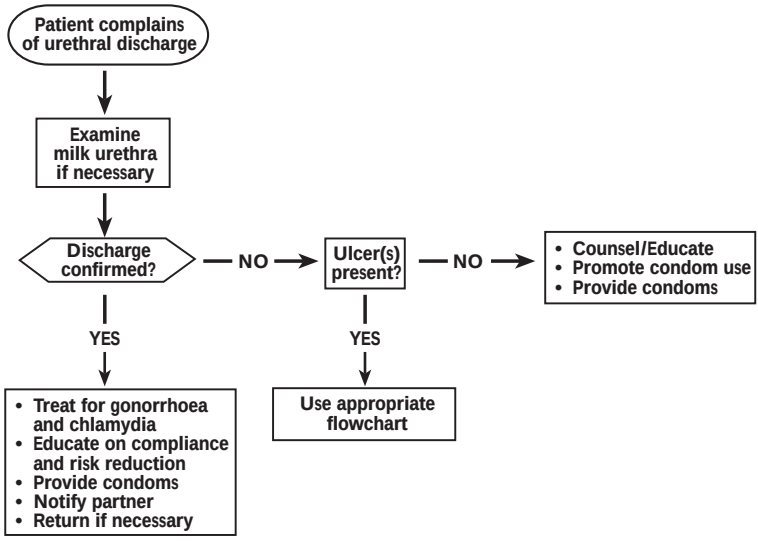
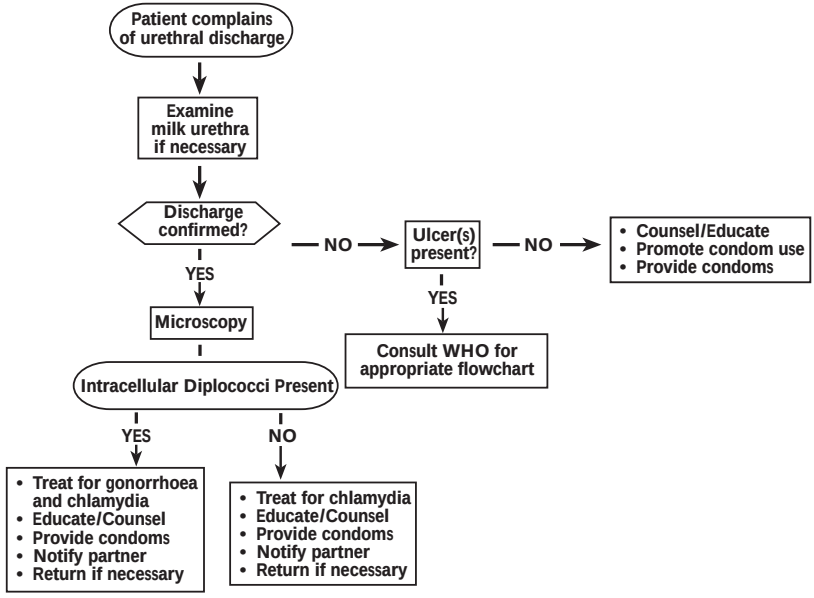
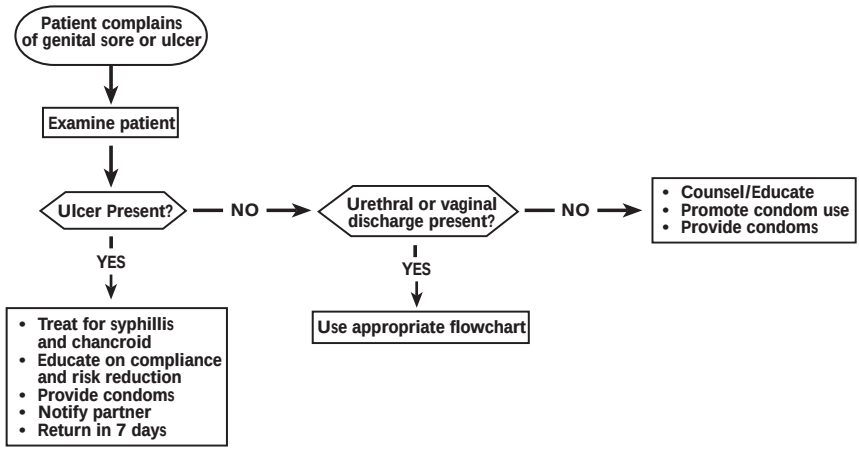



Figure 6:1b Flow Chart for Urethral Discharge with Microscope



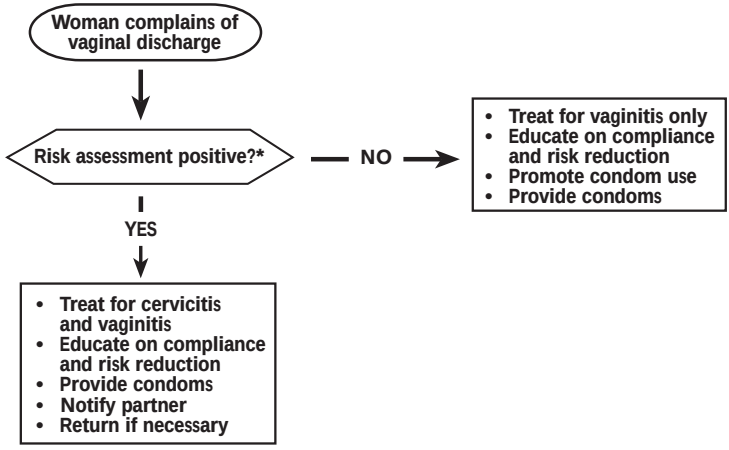

Source: WHO, 1993

Figure 6:2 Flow Chart for Genital Ulcers




Source: WHO, 1993

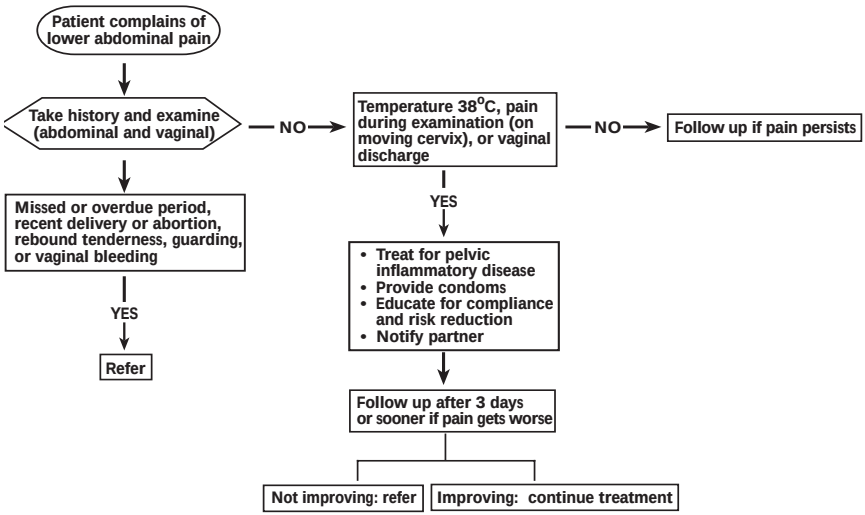
Figure 6:3 Flow Chart for Vaginal Discharge




*Positive = partner symptomatic or any two of the following: age <21; single; >1 partner; new partner in past 3 months.

Source: WHO, 1993

Figure 6:4 Flow Chart for Lower Abdominal Pain




Source: WHO, 1993

The availability, cost, and efficacy of antimicrobial therapies vary widely within Africa. Many drugs are expensive. Furthermore, there has been an increase in the number of strains resistant to standard treatments, especially treatments for gonorrhea and chancroid infections[4,11,31] Consequently, WHO has recommended several possible treatment regimens for each STI. (See Table 6:1.) Clinicians should use the most effective treatment available to them. WHO recommends that drugs used for treatment of STIs in all health care facilities should be at least 95% effective to reduce the risk of developing resistant strains of infection.[39] If WHO-recommended drugs are unavailable, providers should use drugs recommended on their National List of Essential Drugs or by their National Sexually Transmitted Disease Program.[20] The criteria for selecting STI drugs are as follows:

- High efficacy
- Low cost
- Acceptable toxicity and tolerance
- Organism resistance is either unlikely to develop or will be delayed

- Single dose
- Oral administration
- Not contraindicated for pregnant or lactating women

Drugs should be prescribed in recommended doses to ensure full cure and to prevent multiple drug resistance to infection. When possible, provide short-term or single-dose therapy instead of multi-dose therapy. Doing so will eliminate the need for patient compliance and minimize the chance that resistant strains will develop in the population. If limited resources prohibit you from treating all possible STIs, treat for the STI most prevalent in the area. Also counsel clients on the importance of preventing reinfection. In all listed algorithms (except for vaginitis), sex partners should be treated for the same conditions as the index case.[39] Efficient case management of STIs has several key principles:

- Correct diagnosis
- Effective treatment
- Education on risk reduction and prevention
- Promotion and provision of condoms
- Partner notification and treatment
- Clinical follow-up where appropriate

The accuracy and efficiency of syndromic management are being evaluated. WHO reports indicate that syndromic management for urethral discharge in men and genital ulcers in men and women is valid, feasible, and cost effective.[39] Symptomatic case management for women with and without symptoms and signs of vaginal discharge is being studied. Although less accurate than laboratory diagnosis, syndromic management permits diagnosis and treatment of clients during a single visit and requires minimal resources. Symptomatic clients may be diagnosed and treated earlier. Early treatment decreases the duration of infectivity and reduces the likelihood of serious complications from STIs. Unfortunately, many STIs are often subclinical—especially in women—and cannot be detected without laboratory confirmation.[37] Clients without symptoms and signs of infection may be missed by syndromic diagnosis. Conversely, presumptive treatment for all possible STIs expends valuable resources through "over treatment."

Because patterns of disease, availability of resources, and levels of drug resistance among STI pathogens may vary across clinics and regions, the WHO algorithms should be viewed only as guidelines and should be adapted to the needs of the population. The guidelines should not replace clinical judgment. The algorithms in this chapter have been developed specifically for clinics without laboratories, microscopes, specula, etc. Clinics with laboratory capability should consider using other algorithms.

## PARTNER NOTIFICATION

The timely referral and treatment of sex partners of infected clients prevent both a reinfection of the original patient and a further spread of STIs throughout the community. Outreach and community-based workers can notify exposed sex partners, although this process is labor intensive and often impractical. Educating the index patient to bring her sex partner(s) to the clinic for evaluation is probably more cost effective.[13] In Ibadan, after a program was implemented to explain symptoms and signs of STIs and modes of transmission, referral rates among the sex partners of infected clients increased considerably.[17]

Equally important, referral of sex partners helps to identify persons with an asymptomatic STI, who would not otherwise know they are infected. Because men are more likely than women to be symptomatic and to seek early treatment, notifying and treating their exposed female partners is a useful way to identify women with an asymptomatic STI.[37] Family planning programs should coordinate with STI programs to ensure that partners of infected clients are evaluated and treated when infected.

## INTEGRATING PREVENTION SERVICES

When STI-related services can be offered in the family planning clinic, clients are not required to make separate visits to the STI clinic or other primary health center for care.[10,20] In addition, family planning programs that routinely screen for STIs can identify women with

asymptomatic disease who may be at increased risk for complications from infection.[20] Family planning clinics lacking the resources to diagnose and treat women with STIs can refer clients to appropriate higher level care. Thus, clinicians in family planning should be familiar with their local STI program and primary care centers.

The family planning visit also provides an excellent opportunity to educate clients about modes of STI transmission and prevention of future infection. Ensure the client understands how to take any prescribed medication for infection. Use language that the client understands, and encourage the client to ask questions. Strategies employed to reduce incident STIs, such as regular condom use, may also reduce HIV infection.

Services for diagnosis and treatment of STIs should be widely available, highly accessible, and affordable. Some family planning clinics have already extended their range of services to include evaluation, diagnosis, treatment, and counseling for STIs. The Gambia Family Planning Association, for example, treats women with candidiasis and trichomoniasis infections but refers women with other STIs to government clinics.[20]

## SEXUALLY TRANSMITTED INFECTIONS AND CONTRACEPTION

Family planning providers can minimize their clients' risk of STIs by supplying them with contraceptives that protect against both pregnancy and infection and encouraging their use.[8] Contraceptives vary in the amount of protection they provide against STI pathogens. (See Table 6:3.) Condoms are highly effective in protecting against both bacterial and viral STIs, including HIV, and should be used for barrier protection against STIs, regardless of whether other contraceptives are also used. Vaginal spermicides such as films, gels, and suppositories, when used alone, can help prevent infection with bacterial STIs such as cervical gonorrhea and chlamydia, but their protective role against HIV and other viral infections is uncertain. Other contraceptives, such as the diaphragm, protect against cervical infections but provide

insufficient protection from other STIs, such as HIV, that may infect women through the vulva or the vagina. Hormonal contraceptives, which provide the most protection against pregnancy, are associated with reduced risks of symptomatic PID but offer no protection against lower genital tract bacterial or viral STIs. Clinicians providing any contraceptive method should counsel clients about STIs and infertility and encourage condom use.

Table 6:3 Effects of contraceptives on bacterial and viral STIs

| **Contraceptive Method** | **Bacterial STI** | **Viral STI** |
|---|---|---|
| Condom | Protective against all | Protective |
| Spermicide | Protective against cervical gonorrhea and chlamydia | Undetermined *in vivo* |
| Diaphragm | Protective against cervical infection, associated with vaginal anaerobic overgrowth | Protective against cervical infection |
| Hormonal | Associated with increased cervical chlamydia, protective against symptomatic pelvic inflammatory disease (PID) | Not protective |
| Intrauterine device | Associated with PID in first month after insertion | Not protective |
| Natural family planning | Not protective | Not protective |

Source: Cates and Stone, 1992

## GUIDELINES FOR MANAGING PATIENTS

Family planning providers should consider the following guidelines when managing clients with STIs.

### Assess for multiple STIs

Treat for all possible STIs that might cause the symptoms and signs of infection. Coexisting infections are common, especially gonorrhea and chlamydia.[39] Test for HIV infection among clients with STIs when possible.

### Prescribe recommended drugs and doses

Although signs may appear to improve with lower doses of medication, the infection may not be completely cured and, in some cases, will become resistant to treatment. Multiple resistance to antibiotics is common for gonococcal and chancroid infections in many African countries and often requires more difficult and expensive treatment.[11,31] In the case of drug resistant infection or other treatment failure, prescribe an alternative recommended therapy and provide follow-up. The increased cost of new, non-resistant drugs should be weighed against the costs of inadequate therapy (such as reinfection, complications from infection, further spread of infection within the community, and multiple drug resistance).

### Complete all medication

Encourage clients to complete all prescribed medication, even if symptoms subside. Occasionally, the symptoms may disappear without treatment; however, their disappearance does not indicate cure—more severe infection can follow. Discuss with the patient what disease she or he has, how it is transmitted, why it must be treated, and when and how to take prescribed medication.

### Prepare clients for side effects of treatment

Some drugs, such as erythromycin, may cause nausea. Recommend the patient take the medication after meals to reduce nausea. Again, stress the importance of completing the full dose of the medication for the prescribed length of time.

### Treat sex partners

Interrupting the chain of transmission is crucial to STI control. For curable STIs, further transmission and reinfection can be prevented by referral and treatment of sex partners.

### Recommend abstinence During Treatment

Encourage clients to avoid sexual intercourse or to use condoms until their medication is finished and their symptoms and signs of infection have disappeared.

### Provide enough condoms.

Provide condoms to all clients and counsel them on the importance of preventing reinfection and infertility, especially if a woman wishes to bear children. Condom use will minimize contact with infectious ulcers and discharges and will help to prevent HIV infection.

### Provide counseling and follow-up to clients

Advise clients to return to the clinic if symptoms do not subside. Counsel clients to seek health care as soon as possible if they suspect they may have an STI. Teach clients how to recognize symptoms of infection, but emphasize that many STIs are asymptomatic, especially in women.

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